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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/612,663

07/02/2003

Xiang Dai

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02/17/2005

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INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

MITCHELL, JAMES M

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 02/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/612,663

Applicant(s)

DAI ET AL.

Examiner

James M. Mitchell

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>11/15/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to the amendment filed November 15, 2004.

Claim Objections

Claim 8 is objected to because of the following informalities: There is no antecedent basis for a lid of the integrated circuit package. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 15, 16, 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Blanton (U.S. 5,220,200).

Blanton (Fig 2,3) discloses an electronic system comprising means for carrying circuit components (30), means for performing circuit functions (14), means for electrically connecting and mechanically connecting (20) the means for circuit function to the means for carrying circuit components, second means (50) for mechanically connecting the means for performing circuit function to the means for carrying circuit components to enable a gap between the means for performing circuit function and means for carrying circuit component in a first assembled state (Fig 3) and to enable translation of compressive force from the circuit means for performing circuit function to

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the means for carrying circuit components without a gap (Fig 2; Abstract) in a second assembled state of the system; (cl. 16) wherein the substrate includes ceramic material (Col. 4, Lines 31-34) covered with contacts/wiring (42; Fig 1) and therefore is a printed circuit board (Fig 1) and the circuit function means comprised an integrated circuit (abstract) connected to interconnects and therefore is a package (i.e. chip scale package); (cl. 26) and the means for electrically connecting comprises solder column array (CLAIM 8 of Blanton) that decrease in height over time from the first assembled state to the second assembled state in response to application from the compressive load ("bonding of solder bumps"; abstract).

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 8 rejected under 35 U.S.C. 102(e) as being anticipated by Frutschy (U.S. 6,750,551).

Frutschy (Fig 1) discloses an electronic component system comprising a printed circuit board (104), an integrated circuit package (102) having solder column array (112) connecting the integrated circuit package to the printed circuit board and a lid (115) that extends outwardly over an edge of the substrate, and a plurality of supports (158) with one another disposed at each corner of the integrated circuit package underneath the lid of the integrated circuit package (understood to mean that the lid covers the integrated circuit package), and each support sized and shaped to enable a gap between the lid of the package and the support (i.e. in step 192, during installation of

plate/lid there is a gap between support and lid) in a first assembled state of the system and to enable contact between the lid of the integrated circuit package and the support without the gap (Fig 4; step 192-194); (cl. 9) where the second assembled state include a static compressive force (Fig 194) and the first state includes no compressive load (i.e. prior to screw step).; (cl. 10) and a substantial portion of compressive load is shifted to the supports (Col. 4, Lines 40-43)

With respect to the product process limitation that that the "array is configured to decrease over time," the prior art structure is the same as the claimed invention. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)

Claims 8-12, 14, 17-19 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Dai et al. (U.S. 2004/0134680).

Dai (Fig 4) discloses an electronic component system comprising a printed circuit board (16), an integrated circuit package (14, 16) having solder column array (12) connecting the integrated circuit package to the printed circuit board and a lid ("plate... clamp"; Par. 1119) that extends outwardly over an edge of the substrate, and a plurality of supports (20) with one another disposed at each corner of the integrated

circuit package underneath the lid of the integrated circuit package (understood to mean that the lid covers the integrated circuit package), and each support sized and shaped to enable a gap between the lid of the package and the support in a first assembled state of the system and to enable (i.e. capable with enough force) contact between the lid of the integrated circuit package and the support without the gap¹; (cl. 9) where the second assembled state include a static compressive force ("clamp; Par. 0019) and the first state includes no compressive load (i.e. prior to clamp/ screw step).; (cl. 10) and a substantial portion of compressive load is shifted to the supports (Par. 0020); (cl. 11, 18, 19) and supports have wings (i.e. extend laterally along surface) to define a corner of package; (cl. 12) further a heat sink (24); (cl. 14) and the support is made form at least one of a plastic (Par. 0022); (cl. 17) with shim/support insertable underneath lid (i.e. standoff capable of being inserted; Par. 0020); (cl. 18-20) with each wing being perpendicular to each other (i.e. support made by two halves that are perpendicular to each other)

Although Dai discloses process limitation such as shim/standoff insertable ("placed into"; Par. 0020), and the prior art has the same structure as applicant, applicant's invention is device claim. As such the determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product

¹ The claim is limited to a product having a support with a space between itself and lid, additional structural changes that may occur when the product undergoes a specific process (i.e. compressive load applied) does not impart patentability in a product claim.

was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dai et al. (U.S. 2004/0134680) as applied to claims 8 and 17 and further in combination Chuang et al. (U.S. 2004/0036162).

Dai does not appear to show forming its spacer/support with detent (i.e. insertion portion) and a substrate with a hole to insert spacer or that that spacers/ wing (i.e. edge portions of spacer) are connected.

Chuang (Fig 3,4B) discloses forming a spacer with a detent and each support including a detent and a substrate with a hole ("moat") to insert spacer or that that spacers/ wing (i.e. edge portions of spacer) is connected.

It would have been obvious to one of ordinary skill in the art to incorporate forming the spacer of Dai with a detent and including a hole portion in its substrate and connecting the spacers to form a ring in order to restrain the spacer from moving as taught by Chuang (Par. 0034).

Claims 21, 23, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dai et al. (U.S. 2004/0134680) as applied to claims 8, 11 and 13 and further in combination Frutschy (U.S. 6,750,551).

Dai further discloses a lid (i.e. extending portion) does not appear to show holes in the board, Frutschy (Fig 1) discloses holes in a board with fasteners (152) in holes.

It would have been obvious to one of ordinary skill in the art to incorporate holes in the board in order to fasten the package by providing screws/clamp as taught by Frutschy (Fig 1)

Claims 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dai et al. (U.S. 2004/0134680) as applied to claims 8, and further in combination Khiang (U.S. 20040012079).

Dai does not appear to explicitly disclose incorporating its invention in a computer, Khiang teaches forming IC in computers (Par. 0002).

It would have been obvious to one of ordinary skill in the art to incorporate the package of Dai with a computer in order to provide portable electronics as taught by Khiang (Par. 0002).

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blanton et al. (U.S. 5,220,200) as applied to claim 26 and further in combination with Dai et al. (U.S 2004/0134680).

Blanton does not appear to show a lid extending outward, but Dobear utilizes a lid (46) extending outward.

It would have been obvious to one of ordinary skill in the art to incorporate a lid in order to provide heat transfer as taught by Dolbear (Col. 10, Lines 25-27).

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

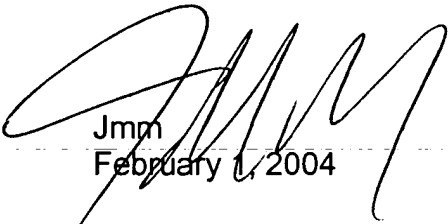
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

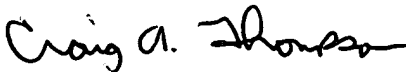
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jmm
February 1, 2004


CRAIG A. THOMPSON
PRIMARY EXAMINER